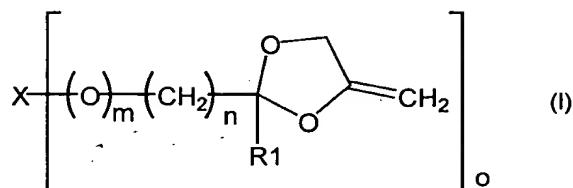


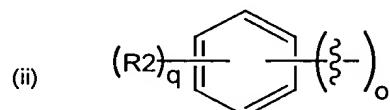
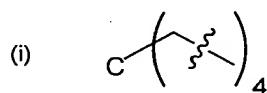
WHAT IS CLAIMED IS:

1. A 4-methylene-1,3-dioxolane compound of the general formula (I):

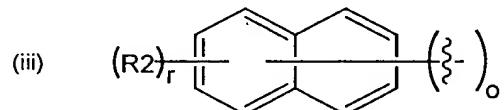


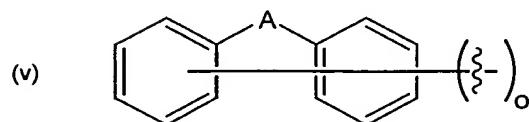
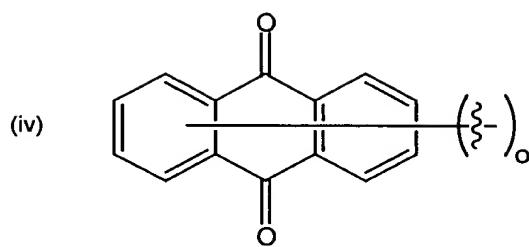
5

wherein R1 denotes hydrogen, C<sub>5</sub>-C<sub>6</sub>-cycloalkyl or C<sub>1</sub>-C<sub>4</sub>-alkyl; m and n, which may be the same or different, denote 0 or 1, wherein m ≤ n, o denotes 2, 3 or 4 depending on the valency of the group X; and X denotes a C-C single bond, straight-chain or branched C<sub>1</sub>-C<sub>18</sub>-alkylene, C<sub>5</sub>-C<sub>6</sub>-cycloalkylene, C<sub>8</sub>-C<sub>18</sub>-arylalkylene, -CH<sub>2</sub>(OCH<sub>2</sub>CH<sub>2</sub>)<sub>p</sub>OCH<sub>2</sub>-, -CH<sub>2</sub>(OCH(CH<sub>3</sub>)CH<sub>2</sub>)<sub>p</sub>OCH<sub>2</sub>-, wherein p is an integer from 0 to 100, or a group selected from



15





wherein  $q \leq (6-o)$ ,  $r \leq (8-o)$ , R2 denotes H or a  $C_1-C_4$ -alkyl group and A denotes a single bond or denotes  $-C(CH_3)_2-$ ,  $-C(CF_3)_2-$ ,  $-CH_2-$ ,  $-SO_2-$  or  $-(C=O)-$ , and wherein the 2-position of the 1,3-dioxolane ring is not linked directly to an aromatic group.

2. The 4-methylene-1,3-dioxolane compound according  
 10 to claim 1, selected from the group consisting of:  
 1,3-Bis-(4-methylene-1,3-dioxolane-2-yl)propane,  
 1,2-bis-(2-methyl-4-methylene-1,3-dioxolane-2-  
 yl)ethane,  
 2,2'-bis-[4-methylene oxyphenyl-(4-methylene-1,3-  
 15 dioxolane-2-yl)]propane,  
 bis-(4-methylene-1,3-dioxolane-2-yl)methane,  
 1,5-bis-(4-methylene-1,3-dioxolane-2-yl)pentane,  
 1,6-bis-(4-methylene-1,3-dioxolane-2-yl)hexane,  
 bis-(4-methylene-1,3-dioxolane-2-yl)methylether,

1,3-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]propane, ?

tetrakis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]neopentane, ?

5 1,4-bis-(4-methylene-1,3-dioxolane-2-yl)cyclohexane,

1,2-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]ethane,

2,2'-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]ethylether,

10 1,4-bis-[ (4-methylene-1,3-dioxolane-2-yl)ethenyl]-  
benzene,

1,3-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]benzene,

1,5-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]naphthalene,

15 2,2-bis-[4-(4-methylene-1,3-dioxolane-2-yl)methylene  
oxyphenyl]propane, ?

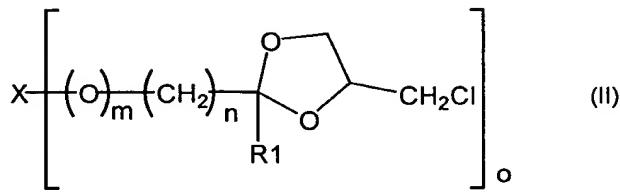
bis-[4-(4-methylene-1,3-dioxolane-2-yl)methylene  
oxyphenyl]methane,

20 4,4'-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]biphenyl,

2,6-bis-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]anthraquinone, and

1,3,5-tris-[ (4-methylene-1,3-dioxolane-2-yl)methylene  
oxy]benzene.

3. A 4-chloromethyl-1,3-dioxolane compound of the general formula (II):



wherein R1, m, n, o and X have the same meanings as those defined for general formula (I) in claim 1, respectively.

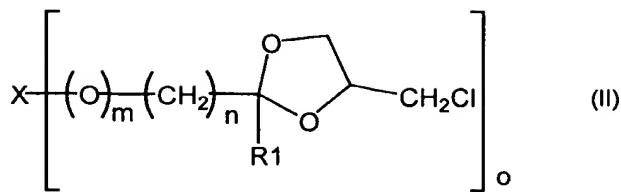
4. The 4-chloromethyl-1,3-dioxolane according to claim 3, selected from the group consisting of:

1,3-bis-(4-chloromethyl-1,3-dioxolane-2-yl)propane,  
10 1,2-bis-(2-methyl-4-chloromethyl-1,3-dioxolane-2-yl)ethane,  
2,2'-bis-[4-methylene oxyphenyl-(4-chloromethyl-1,3-dioxolane-2-yl)]propane,  
bis-(4-chloromethyl-1,3-dioxolane-2-yl)methane,  
15 1,5-bis-(4-chloromethyl-1,3-dioxolane-2-yl)pentane,  
1,6-bis-(4-chloromethyl-1,3-dioxolane-2-yl)hexane,  
bis-(4-chloromethyl-1,3-dioxolane-2-yl)methylether,  
1,3-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxy]propane,  
20 tetrakis-[(4-chloromethyl-1,3-dioxolane-2-yl)methyl-  
ene oxy]neopentane,  
1,4-bis-(4-chloromethyl-1,3-dioxolane-2-yl)cyclo-  
hexane,

1,2-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxy]ethane,  
2,2'-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methyl-  
ene oxy]ethylether,  
5 1,4-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)ethenyl]-  
benzene,  
1,3-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxy]benzene,  
10 1,5-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxy]naphthalene,  
2,2-bis-[4-(4-chloromethyl-1,3-dioxolane-2-yl)methyl-  
ene oxyphenyl]propane,  
bis-[4-(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxyphenyl]methane,  
15 4,4'-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methyl-  
ene oxy]biphenyl,  
2,6-bis-[(4-chloromethyl-1,3-dioxolane-2-yl)methylene  
oxy]anthraquinone, and  
1,3,5-tris-[(4-chloromethyl-1,3-dioxolane-2-  
yl)methylene oxy]benzene.  
20

5. A process for the production of a 4-methylene-1,3-  
dioxolane compound as recited in claim 1, comprising the  
steps of:

25 treating a 4-chloromethyl-1,3-dioxolane compound of  
the general formula (II):



wherein R1, m, n, o and X have the same meanings as those defined for general formula (I) in claim 1, respectively, with a base at a temperature from 0°C to 150°C to obtain a 5 reaction product; and

isolating the reaction product in accordance with a *per se* known process.

6. The process according to claim 5, wherein it is 10 implemented at a temperature from 15°C to 60°C.

7. The process according to claim 5, wherein the treatment is implemented in the presence of a solvent.

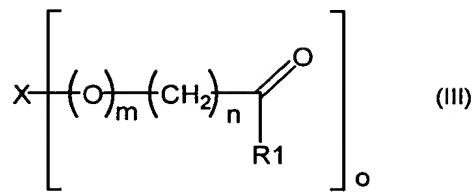
15 8. The process according to claim 7, wherein the solvent is a good solvent for the base.

9. The process according to one of claims 5 to 8, wherein the base is potassium-*tert*-butylate.

20

10. A process for the production of a 4-chloromethyl-1,3-dioxolane compound as recited in claim 3, comprising the steps of:

reacting a compound of the general formula (III):



wherein R1, m, n, o and X have the same meanings as those defined for general formula (II) in claim 3, respectively,

5 with 3-chloro-1,2-propanediol; and

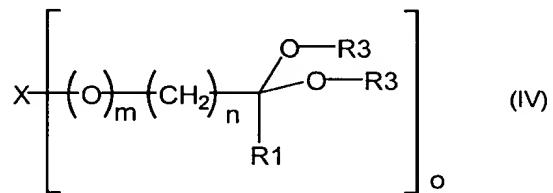
removing the resulting reaction water by distillation.

11. The process according to claim 10, wherein it is  
10 carried out in the presence of a catalyst.

12. The process according to claim 10 or 11, wherein an entrainer is used.

15 13. A process for the production of a 4-chloromethyl-1,3-dioxolanes as recited in claim 3, comprising the steps of:

treating an acetal of the general formula (IV):



wherein R<sub>1</sub>, m, n, o and X have the same meanings as those defined for general formula (II) in claim 3, respectively, and R<sub>3</sub> denotes a methyl or ethyl group, with 3-chloro-1,2-propanediol in the presence of an acidic catalyst at a 5 temperature from 25°C to 150°C; and

removing the resulting alcohol by distillation.

14. A composition capable of emission-free, photocationic cross-linking comprising at least one 4-methylene-1,3-dioxolane compound according to claim 1 and 10 at least one photo-initiator.

15. The composition according to claim 14, wherein the photo-initiator comprises a triaryl sulfonium salt or 15 a diaryl iodonium salt.

16. A transparent film obtained from a composition according to claim 14 or 15.